

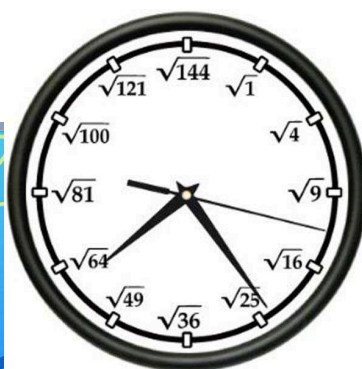
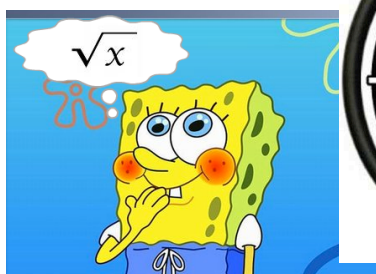
Chapter 6 Square Roots & the Pythagorean Theorem

6.2 Activity The Pythagorean Theorem

Unit Question: How do we use signs and symbols to help us?

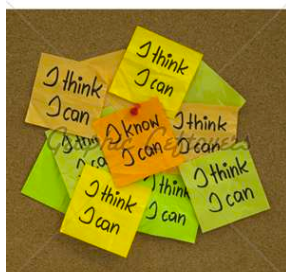
Learner Profile: Inquirer

Area of Interaction: Human Ingenuity



I Can Statement:

I can prove the Pythagorean Theorem and its converse.



Pythagoras was a Greek mathematician and philosopher who discovered one of the most famous rules in mathematics. In mathematics, a rule is called a **theorem**. So, the rule that Pythagoras discovered is called the Pythagorean Theorem.

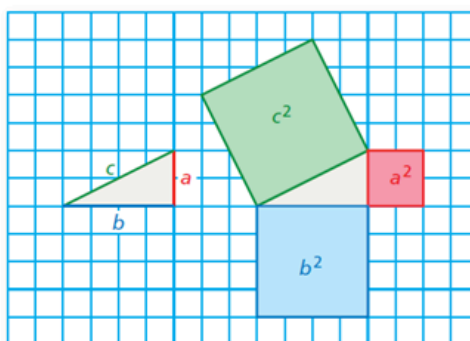


Pythagoras
(c. 570 B.C.–c. 490 B.C.)

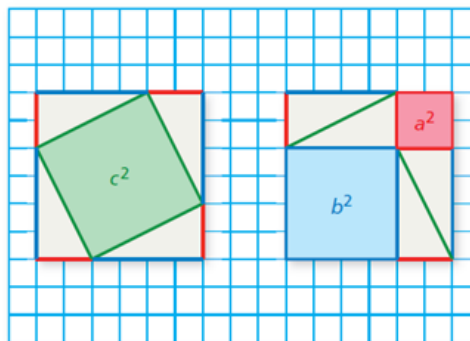
1 ACTIVITY: Discovering the Pythagorean Theorem

Work with a partner.

- On grid paper, draw any right triangle. Label the lengths of the two shorter sides (the **legs**) a and b .
- Label the length of the longest side (the **hypotenuse**) c .
- Draw squares along each of the three sides. Label the areas of the three squares a^2 , b^2 , and c^2 .

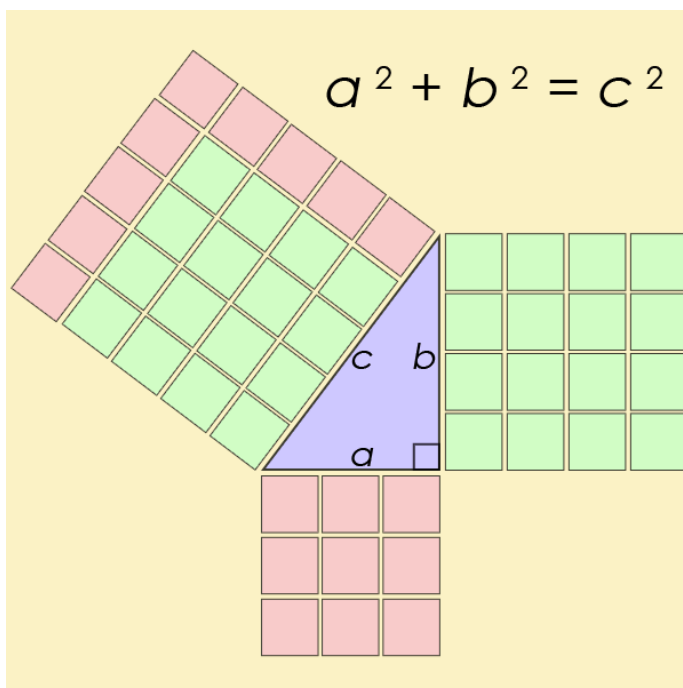


- d. Cut out the three squares. Make eight copies of the right triangle and cut them out. Arrange the figures to form two identical larger squares.




- e. What does this tell you about the relationship among a^2 , b^2 , and c^2 ?

• **Big Idea:** The two squares formed do have equal area. Referring to areas, if $c^2 + (4 \text{ triangles}) = a^2 + b^2 + (4 \text{ triangles})$, then $c^2 = a^2 + b^2$ by subtracting the 4 triangles from each side of the equation.



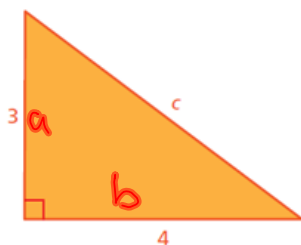
Pythagorean Theorem Water Demo

 <http://www.youtube.com/watch?v=CAkMUdeB06o>

2 ACTIVITY: Finding the Length of the Hypotenuse

Work with a partner. Use the result of Activity 1 to find the length of the hypotenuse of each right triangle.

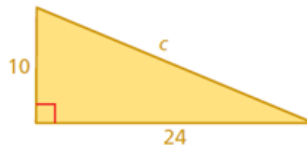
a.



$$3^2 + 4^2 = c^2$$

$$9 + 16 = \sqrt{25}$$

b.

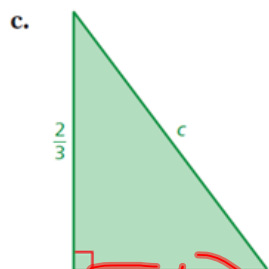


$$10^2 + 24^2 = c^2$$

$$100 + 576 = c^2$$

$$\sqrt{676} = c$$

$$26 = c$$



$$\frac{2}{3}^2 + \frac{1}{2}^2 = c^2$$

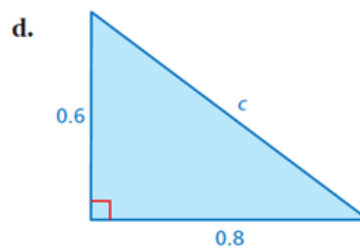
$$\frac{4}{9} + \frac{1}{4} = c^2$$

$$\frac{16}{36} + \frac{9}{36} = c^2$$

$$\frac{25}{36} = c^2$$

$$\sqrt{\frac{25}{36}} = c$$

$$\frac{5}{6} = c$$



$$0.6^2 + 0.8^2 = c^2$$

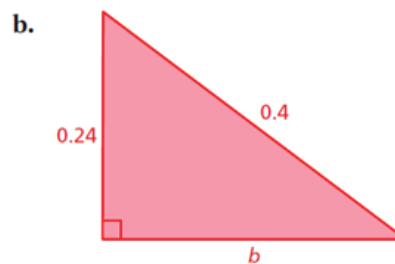
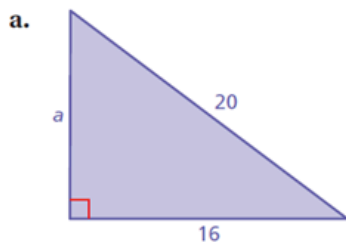
$$0.36 + 0.64 = c^2$$

$$1 = c^2$$

$$1 = c$$

3 ACTIVITY: Finding the Length of a Leg

Work with a partner. Use the result of Activity 1 to find the length of the leg of each right triangle.



What Is Your Answer?

4. **IN YOUR OWN WORDS** How are the lengths of the sides of a right triangle related? Give an example using whole numbers.

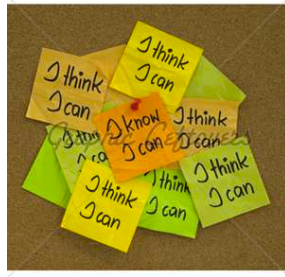


Closure

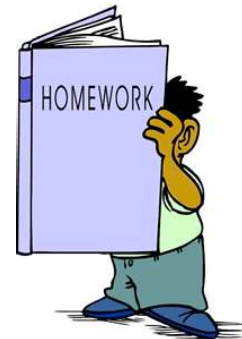
- **Exit Ticket:** If you drew a right triangle with legs of 4 and 6 on grid paper, what would be the area of the square drawn on the hypotenuse of the triangle?

I Can Statement:

I can prove the Pythagorean Theorem and its converse.



Classwork - Workbook p121 -123
Squares & Square Roots Worksheet



Homework -Textbook p240-241 1-18all